INTEGRATED DATA EXCHANGE II

GEBRUIKERSHANDLEIDING

DEEL II

Introduction 39

Emulating IBM 3270 Terminals 47
    Communicating Interactively Through a CPT 8276 SNA Controller 47
        Selecting Communications Parameters 47
    IBM Communications Functions 48

Emulating DEC VT52, VT100, and VT220 Terminals 50
    Selecting Communications Parameters for DEC Terminal Emulation 50
    VT52 Commands and Escape Sequences 51
    VT100 Commands and Escape Sequences 54
    VT220 Commands and Escape Sequences 57

Character Translation Routines 63
    Overview of the Translation Process 63
    Transmission Tables 64
        Normal Font Segment 64
        Alternate Font Segment 64
        Non-escape String Segment 64
        How the Translation Routines Use the Transmission Tables 65
    Reception Tables 68
        Direct Access Segment 68
        String Segment 68
        How the Translation Routines Use the Reception Tables ... 69
    Line Types 71
        Title Lines 71
        Data Lines 73
        Logical End-of-Table Line 75
        Segment Separation Lines 75
        Comment Lines 75
    Creating and Loading Translation Tables 76

Appendix A: IDE II Character Set 79

Appendix B: System Messages 84

Appendix C: IDE II Keyboard Maps 86

Appendix D: Feature Comparison and Specifications for IDE II DEC Emulation 88

Index 91

Introduction

The second part of this manual is designed for programmers and systems analysts. It provides technical information necessary to prepare IDE II software so that the console can communicate with the host computer.

* A detailed explanation of the communications parameters.

* How IDE II operates when emulating IBM 3270 terminals.

* How IDE II operates when emulating DEC VT52, VT100, or VT220 terminals.

* How to adapt IDE II translation routines.

Part II of this manual assumes that you are familiar with the information contained in Part I.

To communicate with an IBM or IBM-compatible computer that supports 3270 terminals, the communications link from the host computer to your console must be established through a CPT 8276 SNA Controller. The Controller enables your workstation to emulate a 3270 terminal.

Communicating Interactively Through a CPT 8276 SNA Controller

When your console is connected to the host computer through a CPT 8276 SNA Controller, the data from the host can be sent to your interactive window. You can use the functions described earlier in this manual and the features of the interactive screen to format the data and send it to the word processing screen to be recorded onto a disk. (See "Using Your Keyboard in the Interactive Window.")

Because your workstation is now emulating a 3270 terminal, you have access to additional functions. These include PF (Program Function) and PA (Program Attention). These functions are used with the Escape key (TASK) and are defined by the IDE software. If the host computer on your communications line uses PF and PA requests, refer to the documentation for your host computer for definitions.

The CPT keys CODE and TASK are used to transmit the interactive functions Control and Escape, respectively.

NOTE: If you transmit X OFF (CODE S), you must send X ON (CODE Q) before you can proceed with any other activity.

Selecting Communications Parameters

If your console is attached to a CPT 8276 SNA Controller, set the following values for the communications parameters:

RATE: 96

STOP BITS: 1

CHARACTER LENGTH: 7

CHARACTER PARITY: Even

IBM Communications Functions

The tables below list the communications functions used with IBM computers, the 8276 Controller functions, the CPT keys used to generate those functions, and the transmission codes (in decimal value) sent by those keys. These functions are only available in VT52 mode.

These tables are for reference by programmers. Generally, IDE operators do not need this information.

IBM Functions	CPT Keys	Transmission Code (Decimal)
PF1	TASK WORD	027 080
PF2	TASK IN	027 081
PF3	TASK SKIP	027 082
PF4	TASK UP	027 083
PF5	TASK LINE	027 087
PF6	TASK OUT	027 069
PF7	TASK HOLD	027 084
PF8	TASK PARA	027 089
PF9	TASK PRINT	027 085
PF10	TASK STOP	027 073
PF11	TASK PAGE	027 079
PF12	TASK DOWN	027 070
PF13	TASK 1	027 049
PF14	TASK 2	027 050
PF15	TASK 3	027 051
PF16	TASK 4	027 052
PF17	TASK 5	027 053
PF18	TASK 6	027 054
PF19	TASK 7	027 055
PF20	TASK 8	027 056
PF21	TASK 9	027 057
PF22	TASK 0	027 048
PF23	TASK -	027 045
PF24	TASK =	027 061
PA1	TASK Soft Key 2*	027 090
PA2	TASK Soft Key 3*	027 088
PA3	TASK Soft Key 4*	027 078

* Soft Key 1 is the soft key at the far left of the keyboard, Soft Key 2 is the soft key to the right of Soft Key 1, etc.

IBM Functions	CPT Keys	Transmission Code (Decimal)
Attention**	Ten-Key Pad 4	027 071
Enter	RETURN	013
Home**	Ten-Key Pad 5	027 072
Cursor Up	Soft Key 1*	027 065
Cursor Down	Soft Key 2*	027 066
Cursor Left	Soft Key 3*	027 068
Cursor Right	Soft Key 4*	027 067
Clear**	Ten-Key Pad 9	027 077
Sys Req**	Ten-Key Pad 6	027 059
Backspace	BACKSPACE	008
Duplicate**	Ten-Key Pad 2	014
Field Mk**	Ten-Key Pad 7	023
Tab	TAB	009
Back Tab	CODE 0	015
Erase EOF**	Ten-Key Pad .	024
Erase Input**	Ten-Key Pad 8	018
Insert	Backward Erase	025
Delete	ERASE	127
New Line	MOVE	010
Test Request**	Ten-Key Pad ,	027 086

8276 SNA Controller Functions	CPT Keys	Transmission Code (Decimal)
No Parity Control	TASK CODE F	027 006
Brand Selection	TASK CODE B	027 002
Printer Assignment (IDENT)	TASK CODE C	027 003
Dynamic Printer (REQUEST/RELEASE)	TASK .	027 046
Local Hard Copy	TASK J	027 074
ENTER XID (dial up)	TASK CODE D	027 004
Terminal Restart	TASK CODE H	027 008
ASCII Char. Display	TASK CODE I	027 009
SDLC A&C Display	TASK CODE J	027 010
SNA Display	TASK CODE K	027 011
PCI Switch Display	TASK CODE L	027 012
Reset**	Ten-Key Pad 3	027 076

* Soft Key 1 is the soft key at the far left of the keyboard, Soft Key 2 is the soft key to the right of Soft Key 1, etc.

** Available only if you select IBM Function for the NUMERIC 10 KEYPAD parameter in the CODE K sequence.

The general communications control functions are described in "Using Your Keyboard in the Interactive Window" in this manual. You use additional functions when you are communicating with a DEC computer or another computer that supports VT52, VT100, or VT220 terminals. The DEC functions and the word processing key(s) used to generate those functions are listed on the following pages. (For additional information, see Appendix D: Feature Comparison and Specifications for IDE II DEC Emulation.)

The tables on the following pages are primarily for reference by programmers. Generally, IDE II operators do not need this information.

NOTE: The interactive window does not support the VT52 Graphics Mode control sequence. However, you can use special graphics from the VT100 character set when emulating a VT52 terminal by using an escape sequence.

Selecting Communications Parameters for DEC Terminal Emulation

The values for the communications parameters are not the same for each DEC computer. To determine the values required by your host computer, consult the appropriate documentation.

VT52 Commands and Escape Sequences

The tables below list the VT52 commands and escape sequences, the CPT keys used to generate them, and the decimal transmission codes sent by those keys. These tables are for reference by programmers. IDE operators generally do not need this information.

VT52 Functions	CPT Keys	Transmission Code (Decimal)
CTRL (Control)	CODE	---
ESC (Escape)	TASK	027
Break	ADJUST	---
DELETE (Delete)	ERASE (forward)	127
LINFD (Line Feed)	MOVE	010
Space	Space Bar	032
Carriage Return	RETURN	013
Backspace	BACKSPACE	008
Tab	TAB	009
Cursor Up	Soft Key 1*	027 065
Cursor Down	Soft Key 2*	027 066
Cursor Left	Soft Key 3*	027 068
Cursor Right	Soft Key 4*	027 067
SOH (Start of Heading)	CODE A	001
STX (Start of Text)	CODE B	002
ETX (End of Text)	CODE C	003
EOT (End of Trans.)	CODE D	004
ENQ (Enquiry)	CODE E	005
ACK (Acknowledge)	CODE F	006
BEL (Bell)	CODE G	007
BS (Backspace)	CODE H	008
HT (Horizontal Tab)	CODE I	009
LF (Line Feed)	CODE J	010
VT (Vertical Tab)	CODE K	011
FF (Form Feed)	CODE L	012
CR (Carriage Return)	CODE M	013
SO (Shift Out)	CODE N	014
SI (Shift In)	CODE O	015

* Soft Key 1 is the soft key at the far left of the keyboard, Soft Key 2 is the soft key to the right of Soft Key 1, etc.

(continued)

VT52 Functions	CPT Keys	Transmission Code (Decimal)
DLE (Data Link Escape)	CODE P	016
DC1 or X On	CODE Q	017
DC2	CODE R	018
DC3 or X Off	CODE S	019
DC4	CODE T	020
NAK (Negative Ack.)	CODE U	021
SYN (Synchronous Idle)	CODE V	022
ETB (End of Trans. Blk)	CODE W	023
CAN (Cancel)	CODE X	024
EM (End of Medium)	CODE Y	025
SUB (Substitute)	CODE Z	026
Escape	TASK	027
FS (File Separator)	CODE /	028
GS (Group Separator)	CODE SHIFT 2	029
RS (Record Separator)	CODE SHIFT H	030
US (Unit Separator)	CODE SHIFT /	031

Certain escape sequences received by your console when in VT52 mode elicit specific responses. The following is a list of the supported escape sequences.

Code Received	VT52 Mode Responses
ESC A	Cursor Up
ESC B	Cursor Down
ESC C	Cursor Right
ESC D	Cursor Left
ESC F	Select Special Graphics
ESC G	Select ASCII
ESC H	Cursor to Home
ESC I	Reverse Line Feed
ESC J	Erase to End of Screen
ESC K	Erase to End of Line
ESC Z	Identify
ESC =	Enter Alternate Keypad Mode
ESC >	Exit Alternate Keypad Mode
ESC <	Enter ANSI Mode
ESC Y Pl Pc	Direct Cursor Address

Pl = Line number + DEC value 32
Pc = Column number + DEC value 32

VT100 Commands and Escape Sequences

Certain escape sequences received by your console when in VT100 mode elicit specific responses. This section lists the sequences supported by IDE II.

These charts are different than those in previous sections because the escape sequences often include various decimal parameters. The abbreviations for these parameters and their equivalents are as follows:

Pn = numeric parameter
Pl = line number
Pc = column number
Pt = top parameter
Pb = bottom parameter
Pa = alternate parameter
Ps = selective parameter

Where a selective parameter is required, the possible values will also be listed.

Sequence	Response
ESC D	Index
ESC E	New line
ESC M	Reverse index
ESC 7	Save cursor and attributes
ESC 8	Restore cursor and attributes
ESC [K or ESC [0 K	Cursor to end
ESC [1 K	Erase from beginning of line to cursor
ESC [2 K	Erase entire line containing cursor
ESC [J or ESC [0 J	Erase from cursor to end of screen
ESC [1 J	Erase from beginning of screen to cursor
ESC [2 J	Erase entire screen
ESC H	Set tab at current column
ESC g or ESC 0 g	Clear tab at current column
ESC 3 g	Clear all tabs
ESC [6 n	What is current cursor position?
ESC Pl;Pc R	Response to cursor position request
ESC [5 n	What is current status?
ESC [0 n	Response to status request
ESC Z or ESC [c or ESC [0 c	What type of terminal are you?
ESC [? 1;2 c	Response to terminal type

(continued)

VT100 Character Set Control Sequence	Response	Values
ESC [Pl;Pc H or ESC [Pl;Pc f	Direct Cursor Address	
ESC [Pt;Pb r	Scrolling Region	
ESC [Ps;Ps m or ESC [Ps m	Character Attributes	Possible values for Ps are: 0 = All attributes off 1 = Bold 4 = Underscore on 5 = Blink on 7 = Reverse Video on
ESC (B	US ASCII to G0	
ESC) B	US ASCII to G1	
ESC (0	DEC Spec Graphics to G0	
ESC) 0	DEC Spec Graphics to G1	
ESC (1	Alt Char ROM to G0	
ESC) 1	Alt Char ROM to G1	
ESC (2	Alt Spec Graphics to G0	
ESC) 2	Alt Spec Graphics to G1	
ESC (Ps	Alt language to G0	
ESC) Ps	Alt language to G1	

With User table loading, you may also set the following languages to G0 and G1:

British	= A	Italian	= Y
Dutch	= 4	Norwegian/Danish	= E or 6
Finnish	= C or 5	Spanish	= Z
French	= R	Swedish	= H or 7
French/Canada	= Q	Swiss	= =
German	= K		

Mode Set and Reset	Sequences	Set	Sequence	Reset
Line feed/New line	ESC [20 h	New Line	ESC [20 l	Line Feed
Cursor key mode	ESC [? 1h	Application	ESC [? 1 l	Cursor
ANSI/VT52 mode	N/A	ANSI	ESC [? 2 l	VT52
Column mode	ESC [? 3 h	132 Column	ESC [? 3 l	80 Column
Scrolling mode	ESC [? 4 h	Smooth	ESC [? 4 l	Jump
Screen mode	ESC [? 5 h	Reverse	ESC [? 5 l	Normal
Origin mode	ESC [? 6 h	Relative	ESC [? 6 l	Absolute
Wraparound mode	ESC [? 7 h	On	ESC [? 7 l	Off
Keypad mode	ESC =	Application	ESC >	Numeric

The following are lists of VT100 commands or escape sequences that are not supported.

Line Size Commands (double height and double width characters)

Change this line to double height (top)	ESC # 3
Change this line to double height (bottom)	ESC # 4
Change this line to single height and width	ESC # 5
Change this line to double width and single height	ESC # 6

Programmable LEDs

Set LEDs ESC [Ps;Ps q

where Ps values
0 or none = all LEDs off
1 = L1 on
2 = L2 on
3 = L3 on
4 = L4 on

Confidence tests

Fill screen with E's (screen alignment)	ESC #8
Invoke tests	ESC [2;Ps y

where Ps values
1 = Power on self test
2 = Data loop back
4 = EIA modem control set
8 = Repeat selected test (until failure or power off)

Reset

Causes power off ESC c

Mode

Auto repeat mode	ESC [? 8 h	On	ESC [? 8 1	Off
Interlace mode	ESC [? 9 h	On	ESC [? 9 1	Off

VT220 Commands and Escape Sequences

Certain escape sequences received by your console when it is in VT220 mode elicit specific responses. This section lists the sequences supported by IDE II.

The CSI stands for Control Sequence Initiator, and is the 8-bit equivalent of the 7-bit ESC [sequence. Where Ps, the symbol for a selective parameter, is required, the possible values are also listed.

VT220 Cursor Control Sequence	Response
ESC D	Index
ESC E	Next Line
ESC M	Reverse Index
ESC 7	Save Cursor and Attributes
ESC 8	Restore Cursor and Attributes

VT220 Character Set Attribute Sequence	Response	Ps Values
CSI Ps;Ps m	Change Character Attributes	0 = All off
Or CSI Ps m		1 = Bold
CSI Pt;Pb r	Scrolling Region	4 = Underscore on
CSI ! p	Soft Terminal Reset	5 = Blink on
CSI Pn A	Cursor Up	7 = Reverse video on
CSI Pn B	Cursor Down	22 = Normal intensity
CSI Pn C	Cursor Right	24 = Not underlined
CSI Pn D	Cursor Left	25 = Not blinking
CSI Pl;Pc H	Direct Cursor Addressing	27 = Positive image
or CSI Pl;Pc f		

VT220 Character Set Selection Sequence	Response
ESC (Pa	Character Set to G0
ESC) Pa	Character Set to G1
ESC * Pa	Character Set to G2
ESC + Pa	Character Set to G3

With user table loading, the following languages can be set to G0, G1, G2, and G3 (these are the acceptable values of Pa):

DEC Spec Graphics = 0
Alternate Char. ROM = 1
Alternate Graphic ROM = 2
DEC Multinational = <
US ASCII = B
British = A
Dutch = 4
Finnish = C or 5

French = R
French/Canada = Q
German = K
Italian = Y
Norwegian/Danish = E or 6
Spanish = Z
Swedish = H or 7
Swiss = =

(continued)

Invoking Character Sets With Lock Sequence	Response
SI	Invoke G0 into GL
SO	Invoke G1 into GL
ESC ~	Invoke G1 into GR
ESC n	Invoke G2 into GL
ESC }	Invoke G2 into GR
ESC o	Invoke G3 into GL
ESC ¶	Invoke G3 into GR

Sequence	Invoking Characters With Single Shifts
ESC N	Invoke G2 into GL for 1 character
ESC O	Invoke G3 into GL for 1 character

Sequence	Selecting C1 Controls
ESC (sp) F	Select 7 bit C0 Controls
ESC (sp) G	Select 8 bit C1 controls

(sp = space)

VT220 Erasure Sequence	Response
CSI K or CSI 0 K	Cursor to End of Line
CSI 1 K	Beginning of Line to Cursor
CSI 2 K	Entire Line of the Cursor
CSI J or CSI 0 J	Cursor to End of Screen
CSI 1 J	Begin. of Screen to Cursor
CSI 2 J	Entire Screen
CSI Pn X	Erase Characters

Sequence	Cursor Position Report
CSI 6 n	Invoked By; (host to term.)
CSI Pl;Pc R	Response

Sequence	Special Character Selections
CSI Pn L	Insert Line
CSI Pn M	Delete Line
CSI Pn @	Insert Characters
CSI Pn P	Delete Characters

(continued)

Mode Set & Reset	Sequence	Set	Sequence	Reset
Keyboard action	CSI 2 h	Locked	CSI 2 l	Unlocked
Insert/Replace	CSI 4 h	Insert	CSI 4 l	Replace
Send/Receive	CSI 12 h	Off	CSI 12 l	On
Linefeed/New line	CSI 20 h	New Line	CSI 20 l	Line Feed
Cursor key mode	CSI ? 1 h	Application	CSI ? 1 l	Cursor
ANSI/VT52 mode	N/A	ANSI	CSI ? 2 l	VT52
Column mode	CSI ? 3 h	132 Column	CSI ? 3 l	80 Column
Scrolling mode	CSI ? 4 h	Smooth	CSI ? 4 l	Jump
Screen mode	CSI ? 5 h	Reverse	CSI ? 5 l	Normal
Origin mode	CSI ? 6 h	Relative	CSI ? 6 l	Absolute
Wraparound mode	CSI ? 7 h	On	CSI ? 7 l	Off
Auto Repeat mode	CSI ? 8 h	On	CSI ? 8 l	Off
Text cursor enable	CSI ? 25 h	On	CSI ? 25 l	Off
Character set mode	CSI ? 42 h	National	CSI ? 42 l	Multi Natl.
Keypad mode	ESC =	Application	ESC >	Numeric

Sequence	Device Attributes	
CSI c or CSI 0 c or CSI Z	What Are Service Attributes	
ESC [? 1:2 c	VT100 Response	(VT100 w/AVO) supported
ESC [? 1;0 c	VT101 Response	(VT101) not supported
ESC [? 6 c	VT102 Response	(VT102) not supported
CSI ? 62;Pc;Pr;Se;Drcs;Udk;9 c	VT220 Response	

Pc = 1 is 132 columns
Pr = 2 is printer port
Se = 6 Selective Erase (N/A)
Drcs = 7 is downline loadable char
Udk= is user definable keys (N/A)
9 = i support 7 bit NRC

(continued)

Sequence	WHAT ARE YOU Report	Values
CSI (GT) c	Invoked by;	
CSI (GT) 1;Pv;Po c	Response;	Pv = version parameter Po = options parameter

Sequence	USER DEFINED KEYS Report
CSI ? 25 n	Invoked By;
CSI ? 21 n	Response;

Sequence	PRINTER Report	Values
CSI ? 15 n	Invoked By;	
CSI ? 13 n	Response;	(I have no printer)

Sequence	CURSOR POSITION Report	Values
CSI 6 n	Invoked By;	
CSI Pv;Ph R	Response;	Pv=row ; Ph=column

Sequence	KEYBOARD LANGUAGE Report	Values
CSI ? 26 n	Invoked By;	Possible values for Pn are:
CSI ? 27; Pn n	Response;	0=Unknown 8=Dutch 1=US ASCII 9=Italian 2=British 10=Swiss (French) 3=Flemish 11=Swiss (German) 4=Fr/Canada 12=Swedish 5=Danish 13=Norwegian 6=Finnish 14=Fr/Belgian 7=German 15=Spanish

The following are lists of VT220 commands and escape sequences that are not supported.

Line Size Commands (double height and double width characters)

Change this line to double height (top)	ESC # 3
Change this line to double height (bottom)	ESC # 4
Change this line to single height and width	ESC # 5
Change this line to double width and single height	ESC # 6

Editing Keys

FIND	CSI 1 ~
INSERT HERE	CSI 2 ~
REMOVE	CSI 3 ~
SELECT	CSI 4 ~
PREV SCREEN	CSI 5 ~
NEXT SCREEN	CSI 6 ~
F6 through F20	

Downline Loadable Character Sets

Downline loadable character sets to G0	ESC (Dscs
Downline loadable character sets to G1	ESC) Dscs
Downline loadable character sets to G2	ESC * Dscs
Downline loadable character sets to G3	ESC + Dscs

SM and RM Set and Reset Modes

Print form feed	On	CSI ? 18 h	Off	CSI ? 18 l
Print extent	Full screen	CSI ? 19 h	Scroll reg	CSI ? 19 l

Selective Erase in Line (DECSEL)

CSI ? K
CSI ? 0 K
CSI ? 1 K
CSI ? 2 K

Selective Erase in Display (DECSED)

CSI ? J
CSI ? 0 J
CSI ? 1 J
CSI ? 2 J

(continued)

Printing

Auto print mode	CSI ? 5 i
	CSI ? 4 i
Printer controller	CSI 5 i
	CSI 4 i
Print cursor line	CSI ? 1 i
Print screen	CSI i
	CSI 0 i

User Defined Keys (DECUDK)

F6 through F14	Dscs Pc;Pl ¶

Select Character Attributes (DECSCA)

Select character attributes	CSI Ps " q

Ps = 0 all attributes off
   = 1 designate character as non-eraseable
   = 2 designate character as eraseable

Confidence tests

Fill screen with E's (screen alignment)	ESC # 8
Invoke tests	CSI 4;Ps;Ps y

Ps 0 = Tests 1, 2, 3, and 6
   1 = Power on self test
   2 = EIA port data loop back
   3 = Printer port loopback
   6 = EIA port modem control line loopback
   7 = 20 MA port loopback
   9 = Repeat selected test (until failure or power off)

Reset

Causes power off	ESC c

The translation routines built into IDE II allow you to communicate with computers using only certain character sets. This is dictated by the standard translation tables found on the program disk. If you will be communicating with a computer that does not use one of these character sets, you must create new translation tables.

The standard IDE II translation tables are as follows:

- * CPT to ASCII and DEC Multinational transmission table
- * DEC Multinational reception table
- * DEC (VT52) ASCII reception table
- * DEC (VT52) Special Graphics reception table

Overview of the Translation Process

A character generated by your console is represented by a value found in your console's character set or, more specifically, your console's ROM. This same value may correspond to a different character on a computer using a different character set. For you to communicate effectively with this computer, some sort of translation must occur. The character translation routines of IDE II translate the character values generated by your console into values that the computer with which you are communicating will understand, and vice versa.

IDE II uses two kinds of tables in its translation routines. One set is used in the transmission process, the other in the reception process.

Transmission Tables

The transmission tables used by IDE II to translate CPT character values into other character values consist of three parts. (See Figure 10.) The first distinct group of numbers is the Normal Font segment of the transmission table, the second is the Alternate Font segment, and the third is the Non-escape String segment. These segments derive their names from the the three different types of characters generated by your console, and the way in which the translation routines use each segment.

The lines that make up these tables and their formats are discussed in detail later in this section.

Normal Font Segment

The normal font segment is the first group of numbers in Figure 10. It has three types of lines: a title line, data lines, and comment lines. The numbers in the data lines, which represent ASCII decimal character values, must be between 32 and 255. This segment of the table is 208 bytes.

The translation routines access the normal font segment when you attempt to transmit a character that is found on the normal, or standard, ROM.

Alternate Font Segment

The alternate font segment is the second group of numbers in Figure 10. It is similar to the normal font segment in that it has comment lines, and its data lines follow the same format and represent the same character values. This segment must be preceded by a segment separator line. Also, it is a different size than the normal font segment and it serves a different function. This segment of the table is 128 bytes.

The translation routines access the alternate font segment when you attempt to transmit a character that is found on the alternate ROM.

Non-escape String Segment

The non-escape string segment is the third group of numbers in Figure 10. In most respects, it differs from the other two types of transmission segments. The most visible of these differences is the format of the data lines. These lines are similar to the others, however, in that the numbers represent ASCII character values between 32 and 255. This table must be preceded by a segment separator line and followed by a logical end-of-table line. This segment of the table may be up to 255 bytes (85 entries) long.

The translation routines access the non-ecape string segment when you attempt to transmit a character that is preceded by a non-escape character (values 240 through 255).

How the Translation Routines Use the Transmission Tables

Transmission routines convert CPT multiple-byte character sequences into 7- or 8-bit characters for transmission to the host computer. The 8-bit characters, which include any character with a value of 0 through 255, are transmitted only when IDE II is in the VT220 8-bit mode of operation. Seven-bit characters (those with a value of 0 to 127) are transmitted when IDE II is in VT52, VT100, or VT220 7-bit mode.

When you transmit a character, your console generates a character sequence. This sequence must go through the translation routine to determine which character value, if any, will be sent to the host computer.

When the system sees a character sequence that is not preceded by a non-escape or alternate-font character value, it uses the normal font segment of the transmission table to determine which value to transmit.

For instance, if your console generated a capital A, the system would find the position on the normal font segment that corresponds with the value 65 (the ASCII value of capital A). In this case, the position is column one of row 4. (See the normal font segment of Figure 10.) The system would then transmit the value it found in that position.

When it sees a character preceded by the alternate font value (202), the system looks at the position on the alternate font segment of the transmission table that corresponds with the value of the character that your console has generated. The system then transmits the value found in that position.

If a character is preceded by a non-escape value (240 through 255), the system searches the first column of values on the non-escape string table for an exact match of that value. If it finds a match, the character value is compared to the next value of that string table entry. When the match is found, the third three-digit number in that string table entry is the one that is transmitted to the host computer. If no match is found, the value zero is returned and no transmission takes place.

IDE II Transmission Table

```
! B:1
*
TNO ;          CPT normal font to ASCII or DEC Multinational
*  0   1   2   3   4   5   6   7   8   9   A   B   C   D   E   F  (COL/ROW)
@(032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047)      2
@(048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063)      3
@(064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079)      4
@(080 081 082 083 084 085 086 087 088 089 090 091 188 093 000 162)      5
@(176 097 098 099 100 101 102 103 104 105 106 107 108 109 110 111)      6
@(112 113 114 115 116 117 118 119 120 121 122 000 189 000 178 179)      7
@(000 000 000 000 000 000 181 000 186 032 000 000 169 032 000 124)      8
@(032 177 199 231 216 248 198 230 223 165 000 163 182 167 161 191)      9
@(032 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000)      A
@(000 000 000 000 000 000 000 000 000 000 000 000 000 045 045 045)      B
@(000 000 000 000 095 000 000 000 000 000 000 000 000 000 000 000)      C
@(000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000)      D
@(000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000)      E
;
*
TAO ;          CPT alternate font to ASCII or DEC Multinational
*  0   1   2   3   4   5   6   7   8   9   A   B   C   D   E   F  (COL/ROW)
@(000 000 000 000 000 000 000 000 000 000 000 170 215 000 000 000)      2
@(000 000 000 000 000 000 000 000 000 000 000 000 247 000 000 000)      3
@(000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000)      4
@(000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000)      5
@(000 000 000 000 000 000 000 000 000 000 000 000 000 000 000 000)      6
@(000 000 000 000 000 183 000 000 000 000 000 000 000 000 000 187)      7
@(000 000 000 171 000 000 000 000 092 000 000 000 000 000 000 000)      8
@(000 000 000 168 000 000 000 000 000 000 000 123 125 000 000 000)      9
;
*
TSO ;          CPT non-escapes to ASCII or DEC Multinational
* (ne)(ch)DEC
@(245 032 094)     Circumflex blank
@(244 032 096)     Grave blank
@(247 032 126)     Tilde blank
@(244 065 192)     Grave A
@(243 065 193)     Acute A
@(245 065 194)     Circumflex A
@(247 065 195)     Tilde A
@(242 065 196)     Umlaut A
@(241 065 197)     Degree A
@(244 065 200)     Grave A
@(243 069 201)     Acute E
@(245 069 202)     Circumflex E
@(242 069 203)     Umlaut E
@(244 069 203)     Grave E
```

(table continued)

```
@(243 073 205)     Acute I
@(245 073 206)     Circumflex I
@(242 073 207)     Umlaut I
@(247 078 209)     Tilde N
@(244 079 210)     Grave O
@(243 079 211)     Acute O
@(245 079 212)     Circumflex O
@(247 079 213)     Tilde O
@(242 079 214)     Umlaut O
@(244 085 217)     Grave U
@(243 085 218)     Acute U
@(245 085 219)     Circumflex U
@(242 085 220)     Umlaut U
@(242 089 221)     Umlaut Y
@(244 097 224)     Grave a
@(243 097 225)     Acute a
@(245 097 226)     Circumflex a
@(247 097 227)     Tilde a
@(242 097 228)     Umlaut a
@(241 097 229)     Degree a
@(244 101 232)     Grave e
@(243 101 233)     Acute e
@(245 101 234)     Circumflex e
@(242 101 235)     Umlaut e
@(244 105 236)     Grave i
@(243 105 237)     Acute i
@(245 105 238)     Circumflex i
@(242 105 239)     Umlaut i
@(247 110 241)     Tilde n
@(244 111 242)     Grave o
@(243 111 243)     Acute o
@(245 111 244)     Circumflex o
@(247 111 245)     Tilde o
@(242 111 246)     Umlaut o
@(244 117 249)     Grave u
@(243 117 250)     Acute u
@(245 117 251)     Circumflex u
@(242 117 252)     Umlaut u
@(242 121 253)     Umlaut y
@(000)             END of TSO String/TABLE
*
$
```

Figure 10. IDE II transmission table

Reception Tables

Reception tables are similar to transmission tables except that they are shorter and do not require a separator character between the segments. (Their format will be discussed in greater detail later in this section.) In function, they reverse the procedure of the transmission tables: they convert a one-byte character value into a two-byte CPT character sequence.

There are two types of reception table segments used by IDE II to tranlate character values received from other computers into CPT character values. Figure 11 illustrates the default reception table used by IDE II. In this figure, there are two distinct groups of numbers. The first group is the Normal Font, or Direct Access segment. The second is the Alternate Font and Non-escape, or String segment. These segments derive their names from the way in which the translation routines use each segment.

Direct Access Segment

The direct access segment is the first group of numbers in Figure 11. It has three possible types of lines: a title line, data lines, and comment lines. The numbers in the data lines, which represent ASCII decimal character values, must be between 32 and 126. This segment of the table is 96 bytes.

The translation routines access this segment for each character value your console receives from the host computer to which your console is connected.

String Segment

The string segment is the second group of numbers in Figure 11. In most respects, it is quite different from the other reception table segment. The most visible of these differences is the format of the data lines. These lines are similar to the others, however, in that the numbers represent ASCII character values between 32 and 255. This segment of the table may be up to 160 (53 entries) bytes.

The translation routines access this segment when a 000 value is found in the position that was indexed on the direct access segment.

How the Translation Routines Use the Reception Tables

The reception tables can only handle character values between 32 and 127. If your console is in 8-bit mode and receives a character with a value greater than 128, the translation routines "bias" those characters down by 128, and use the table loaded in the high-memory position for finding characters. The biased characters with values of 0 through 31 and 127 are not passed to the translation routines.

If your console is in 7-bit mode, no values greater than 127 enter the system. The high-order bit is removed in order to keep the value in the proper range.

Each three-digit number in the direct access segment of the reception table corresponds to a character value between 32 and 127. When this segment is indexed by the translation routine, the reception routine returns the value found in the corresponding position.

For instance, if a value of 47 was received, the reception routine would index the 15th character, or column, of the second row. (Remember that the table is a hexadecimal table with decimal character values.) The value returned from this position would be 47. (See Figure 11.) This value is then used to find the bit pattern (character) in the corresponding position in the standard font ROM (See Appendix A: IDE II Character Sets). The character found there, a slash, is then displayed on your screen.

The string segment of the reception table is searched if the value found in the direct access segment is 000.

For example, if the value 92 was received from the host computer, the reception routine would index the 12th character of the fifth row. Since the value in this position is 000, the reception routine would search the string table for the data line beginning with the value 092, where it would find this line:

```
    @(092 202 136) Alternate/font backslash
```

The second value on this line represents a CPT prefix character, in this case, the alternate font select value 202. This instructs the display hardware to index the alternate font ROM for the bit pattern in position 136. This character (bit pattern) is then displayed in the interactive window at the current cursor position.

```
!B:1
**
R1 ;                  ASCII to CPT normal font
*  0   1   2   3   4   5   6   7   8   9   A   B   C   D   E   F  (COL/ROW)
@(032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047)       2
@(048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063)       3
@(064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079)       4
@(080 081 082 083 084 085 086 087 088 089 090 091 000 093 000 196)       5
@(000 097 098 099 100 101 102 103 104 105 106 107 108 109 110 111)       6
@(112 113 114 115 116 117 118 119 120 121 122 000 143 000 000 000)       7
*
*                     ACSII to CPT (af)(ch) or (ne)(ch)
* DEC (xx)(ch)
@(092 202 136)     Alternate/font backslash                5    C
@(094 245 032)     Circumflex blank                        5    E
@(096 244 032)     Grave blank                             6    0
@(123 202 155)     Alternate/font left curly bracket       7    B
@(125 202 156)     Alternate/font right curly bracket      7    D
@(126 247 032)     Tilde blank                             7    E
@(000)
*
$
```

Figure 11. IDE II reception table

Line Types

When you create new translation tables, certain guidelines must be strictly followed. Any variation from the line formats and parameters given in this section will cause the software to be unable to load your tables.

There are five types of lines used to create translation tables. The first three (title lines, data lines, and logical end-of-table lines) are required in both the transmission and reception tables. The other two are segment separation lines, which are required for transmission tables, and comment lines, which are optional for both kinds of tables.

Title Lines

A title line is required on the first line of both the transmission and reception tables. The information on the title line is required by the IDE II software to identify the beginning of the table. See Figure 12.

The format for the title line is:

```
! t:v
```

The exclamation mark is required in column one of the table to define that line as a title line. The "t" represents the last character of the escape sequence that is used to select alternate character sets (see "Emulating DEC VT52, VT100, VT220 Terminals" in this manual). The "v" represents the value used by the IDE II software to refer to the table once it is loaded into memory.

Because you are communicating with another computer, the values that you use to identify your tables must be values that the host computer will recognize. The "t" values in Figure 12, then, are those defined by DEC and are not unique to the IDE II implementation.

In Figure 12, the Transmit and Receive columns indicate whether or not, given the character sets built into the IDE II software, you can create that table.

t:v	Table and/or language	Transmit	Receive
0:0	DEC Special graphics	N	Y
1:17	DEC Alternate character ROM	N	Y
2:18	DEC alternate graphic ROM	N	Y
4:8	Dutch	Y	Y
5:6	Finnish (or C:6)	Y	Y
6:5	Danish	Y	Y
7:12	Swedish (or H:12)	Y	Y
<:16	DEC Multinational	N	Y
=:10	Swiss (German or French)	Y	Y
A:2	British	Y	Y
B:1	ASCII (North American)	Y	Y
C:6	Finnish (or 5:6)	Y	Y
E:13	Norwegian	Y	Y
H:12	Swedish (or 7:12)	Y	Y
K:7	German	Y	Y
Q:4	French/Canadian	Y	Y
R:3	French	Y	Y
Y:9	Italian	Y	Y
Z:15	Spanish	Y	Y

Figure 12. Title lines for translation tables

Data Lines

The character values of the translation routine tables are located on the data lines. These lines are thus necessary to the transmission and reception routines. The data lines occur in three different formats, two for transmission tables and one for reception tables.

The first data line format occurs in the normal font and alternate font segments of the transmission table, and in the direct access segment of the reception table.

The format for this type of data line is:

```
@(nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn nnn)
```

The "at" sign (@) is required in column one to define that line as a data line. The left and right parantheses are data delimeters. The left parenthesis must immediately precede the first data value. A carriage return or comments may follow the right parenthesis.

The "nnn" represents a three-digit ASCII decimal character value. It is the numeric value of the data byte to be transmitted when its position on the table is indexed. There must be 16 character values per line, each separated by a space. The possible data values are 032 through 255. Each value must be represented by a three-digit number (e.g., 32 represented by 032).

The second data line format occurs in the non-escape string segment of the transmission table.

The format for this type of data line is:

```
@(nev chv nnn)
```

The "at" sign (@) is required in column one to define that line as a data line. The left and right parentheses are data delimiters. The left parenthesis must immediately precede the first data value. A carriage return or comments may follow the right parenthesis.

The "nev" represents a CPT non-escape character value. Possible values for it are 240 through 255. The "chv" represents a CPT character value which may be between 32 and 159. The "nnn" represents the numeric value of the data byte to be transmitted. Possible numeric values are: 32 through 127 for 7-bit values, and 160 through 255, the additional 8-bit values. Each character value must be separated by a space, and represented by a three-digit number.

The third type of data line occurs in the string segment of the reception table.

The format for this type of data line is:

@(rav pcv ecv)

The rules regarding the "at" sign and the parentheses for this kind of line are the same as for the other types of data lines.

The "rav" represents the ASCII character value received from the host computer. The possible values for it are 032 through 126. The "pcv" represents the CPT prefix character value. The possible values for it are 240 through 255 for non-escape values, and 202 for the alternate font select value. The "ecv" represents the CPT escape character value which must be between 032 and 159. Each numeric value must be represented by a three-digit number (e.g., 32 represented by 032).

Logical End-of-Table Line

The logical end-of-table line occurs in both the transmission and reception tables. It is required on the last line of the table.

The format for this type of line is:

```
$
```

The dollar sign is required in column one at the end of the table to indicate to the software that there is no more data. It may be followed by a carriage return or comments.

Segment Separation Lines

The segment separation lines occur only in the transmission tables. They indicate the separation points between the three segments of the table.

The format for this type of line is:

```
;
```

The semicolon is required in column one of the transmission table. It may be followed by a carriage return or comments.

Comment Lines

Comment lines are optional lines that may occur in both the transmission and reception tables. They have no special format other than that they must begin with any character other than those defining the four line types described above. In Figure 10, comment lines begin with an asterisk.

Creating and Loading Translation Tables

When you create translation tables, you must record them on the program disk under specific page labels. The transmission table must have the page label "TT." Reception tables must have page labels within the page range "TR" through "TR9." The transmission and reception tables must be on the same disk.

You can use only one transmission table, but you can use several reception tables. The transmission and reception tables must have the same title line to ensure that the transmitted characters will display the correct graphics. (See "Title Lines" in this section for more information.)

If you select the resident ASCII tables for the TABLES parameter in the CODE K sequence, the IDE II software does not attempt to load any tables. However, if you select User tables, the software attempts to load any user-defined tables when you touch the SELECT TERMINAL soft key to access the divided screen.

When attempting to load User tables, IDE II first looks for reception tables in the range of "TR" through "TR9." If these are not found, the message "13.8 IDE II DEFAULTED TO ASCII. USER PAGE XX HAS ERRORS" appears and the default tables are used. If User reception tables are found, IDE II attempts to find a transmission table on your disk under the "TT" label. If this is not found, the default tables will be used.

To create a new transmission table:

1. Using standard word processing, type the transmission table shown in Figure 10. Your table should be identical to the example. Remember that the punctuation must be exactly the same.
2. Change the title line accordingly, using the parameters given in this section. Use Figure 12 to determine the appropriate title line for you.
3. Make the necessary changes to each of the three segments of your table. You will need to refer to "Appendix A: CPT Standard Character Set" as well as a table of the character set to which you are translating. The latter can be found in the programmer's manual that accompanied your host computer.
4. Save the page that you have created under the label "TT."
5. Select User for the TABLES prompt in the CODE K sequence.

   If there are no errors in the table, it will load when you access the divided screen.

   If errors are encountered, the IDE II software will default to the standard ASCII tables.

To create a new reception table:

1. Using standard word processing, type the reception table shown in Figure 11. Your table should be identical to this example. Remember that the punctuation must be exactly the same.
2. Change the title line accordingly, using the parameters given in this section. Use Figure 12 to determine the appropriate title line for you.
3. Make the necessary changes to each of the two segments of your table. You will need to refer to "Appendix A: CPT Standard Character Set," as well as a table of the character set to which you are translating. The latter can be found in the programmer's manual that accompanied your host computer.
4. Save the page that you have created under a label in the range of "TR" through "TR9."
5. Select User for the TABLES prompt in the CODE K sequence.

   If there are no errors in the table, it will load when you access the divided screen.

   If there are errors, IDE II will default to the standard translation tables.

Decimal	Hex.	CPT Character	Alt Font Character	ASCII
0	00		NUL	Null Code
1	01		SOH	SOH
2	02		STX	STX
3	03		ETX	ETX
4	04		EOT	EOT
5	05		ENQ	ENQ
6	06		ACK	ACK
7	07		BEL	BEL
8	08		BS	BS
9	09		HT	HT
10	0A		LF	LF
11	0B		VT	VT
12	0C		FF	FF
13	0D	Carriage return	Carriage Return	CR
14	0E		SO	SO
15	0F		SI	SI
16	10		DLE	DLE
17	11		DC1	DC1
18	12		DC2	DC2
19	13		DC3	DC3
20	14		DC4	DC4
21	15		NAK	NAK
22	16		SYN	SYN
23	17		ETB	ETB
24	18		CAN	CAN
25	19		EM	EM
26	1A		SUB	SUB
27	1B		ESC	ESC
28	1C		FS	FS
29	1D		GS	GS
30	1E		RS	RS
31	1F		US	US
32	20	Space	Space	SP
33	21	Exclamation point-!	┘	!
34	22	Quotation mark-"	└	"
35	23	Pound sign-#	┌	#
36	24	Dollar sign-$	┼	$
37	25	Percent sign-%	├	%
38	26	Ampersand-&	┤	&
39	27	Apostrophe-'	┬	'
40	28	Left parenthesis-(	┴	(

(continued)

Decimal	Hex.	CPT Character	Alt Font Character	ASCII
41	29	Right parenthesis-)	│	)
42	2A	Asterisk-*	─	*
43	2B	Plus sign-+	ª	+
44	2C	Comma-,	Œ	,
45	2D	Minus sign--	Ĳ	-
46	2E	Period-.	Þ	.
47	2F	Slash-/	Ð	/
48	30	Zero-0	╖	0
49	31	One-1	╜	1
50	32	Two-2	╙	2
51	33	Three-3	╓	3
52	34	Four-4	╬	4
53	35	Five-5	╠	5
54	36	Six-6	╣	6
55	37	Seven-7	╦	7
56	38	Eight-8	╩	8
57	39	Nine-9	║	9
58	3A	Colon-:	═	:
59	3B	Semicolon-;	∩	;
60	3C	Less than-<	œ	<
61	3D	Equal-=	ĳ	=
62	3E	Greater than->	þ	>
63	3F	Question mark-?	đ	?
64	40	At sign-@	╥	@
65	41	A	╨	A
66	42	B	╙	B
67	43	C	╒	C
68	44	D	╪	D
69	45	E	╞	E
70	46	F	╡	F
71	47	G	╤	G
72	48	H	╧	H
73	49	I	▌	I
74	4A	J	▬	J
75	4B	K	♠	K
76	4C	L	♦	L
77	4D	M	♥	M
78	4E	N	♣	N
79	4F	O	⊏	O
80	50	P	╕	P

(continued)

Decimal	Hex.	CPT Character	Alt Font Character	ASCII
81	51	Q	╛	Q
82	52	R	╞	R
83	53	S	╓	S
84	54	T	╫	T
85	55	U	╟	U
86	56	V	╢	V
87	57	W	╤	W
88	58	X	╧	X
89	59	Y	▌	Y
90	5A	Z	▬	Z
91	5B	Left bracket-[	⌂	[
92	5C	Fraction-¼	▲	\
93	5D	Right bracket-]	►	]
94	5E	Fraction-¾	◄	^
95	5F	Cent sign-¢	≡	_
96	60	Degree sign-°	α	`
97	61	a	ψ	a
98	62	b	Γ	b
99	63	c	π	c
100	64	d	Σ	d
101	65	e	▀·	e
102	66	f	χ	f
103	67	g	τ	g
104	68	h	Φ	h
105	69	i	θ	i
106	6A	j	Ω	j
107	6B	k	δ	k
108	6C	l	∞	l
109	6D	m	⁝	m
110	6E	n	ε	n
111	6F	o	⌐	o
112	70	p	λ	p
113	71	q	⌠	q
114	72	r	⌡	r
115	73	s	÷	s
116	74	t	≈	t
117	75	u	•	u
118	76	v	°	v
119	77	w	ɿ	w
120	78	x	░	x

(continued)

Decimal	Hex.	CPT Character	Alt Font Character	ASCII
121	79	y	▒	y
122	7A	z	▚	z
123	7B	Down arrow-↓	□	{
124	7C	Fraction-½	▙	|
125	7D	Up arrow-↑	▚	}
126	7E	Superscript2-^{2}	¬	DEL
127	7F	Superscript3-^{3}	»	
128	80	One's index mark-'	—	
129	81	Five's index mark-'	—	
130	82	Ten's index mark-'	—	
131	83	Margin mark-■	«	
132	84	Tabulation mark-T	—	
133	85	Dagger-†	≤	
134	86	Mu-µ	≥	
135	87	Cursor mark-▮	≠	
136	88	Spanish o-º	\	
137	89	Coded tab-▸	◆	
138	8A	Trademark symbol-™	␊	
139	8B	Registration mark-®	␋	
140	8C	Copyright symbol-©	␌	
141	8D	Coded carriage return-◂	■	
142	8E	Portugese o- ọ	[illegible]	
143	8F	Vertical line- |	⊖	
144	90	Coded blank-CB -•	ↄ	
145	91	Plus-or-minus sign- ±	␉	
146	92	C cedilla- Ç	␍	
147	93	c cedilla-ç	[illegible]	
148	94	Slash-O- Ø	✓	
149	95	Slash-o-ø	␤	
150	96	Greek AE-Æ	■	
151	97	Greek ae-æ	₧	
152	98	German double s-ß	▯	
153	99	Japanese yen-¥	▮	
154	9A	Franc or Florin-ƒ	□	
155	9B	British pound-£	⌠	
156	9C	Paragraph symbol-¶	⌡	
157	9D	Section mark-§	[illegible]	
158	9E	Inverted exclamation mark-¡	[illegible]	
159	9F	Inverted question mark-¿	🯅	
160	A0	Pseudoblank-PB		

(continued)

Decimal	Hex.	CPT Non-escape Character
224	E0	Multiple blank-MB (R)
225	E1	Multiple steps-SM (R)
240	F0	Blank-NE
241	F1	Degree-°
242	F2	Umlaut-¨
243	F3	Acute accent-´
244	F4	Grave accent-`
245	F5	Circumflex accent-ˆ
246	F6	Breve-Caron accent-ˇ
247	F7	Tilde-˜
248	F8	Apostrophe accent-ʼ
249	F9	Double acute accent- ˝
250	FA	
251	FB	Single bar-NEDBAR ——
252	FC	Double bar-NEDBAR ══
253	FD	Single dot-NEDOT •
254	FE	HAT-NEHAT ⊓
255	FF	Delete/Erase

Appendix B: System Messages

Sometimes conditions may exist which prevent your gaining access to the divided screen. If the divided screen does not appear when you follow the procedure to access it, a message in the status area explains why you cannot complete the procedure at that time. The messages are explained in the list below.

3.51 WP RESOURCES UNAVAILABLE. PLEASE TRY AGAIN.

Reason: You tried to access the divided screen, but the printer or some other peripheral device attached to your console was using the temporary storage space available for word processing operations. Accessing the divided screen requires some of those resources.

Action: Try again, or wait until printing or other word processing operations are completed. Then, try to access the divided screen again. Once you have accessed the divided screen, printing can take place as a background operation.

3.59 SCREEN IS TOO FULL TO SPLIT.

Reason: You tried to access the divided screen, but you have a long page of text displayed on the screen. The interactive window reserves about one-half to two-thirds of the screen memory and cannot be accessed until you reduce the amount of text already in screen memory.

Action: Reduce the amount of text in screen memory. One way to do this is to divide the text into smaller units, record them onto a disk, and recall each page to the screen separately. In this way, you free the portion of screen memory required for the interactive window.

3.72 THE UPPER SCREEN IS TOO SMALL.

Reason: You tried to access the divided screen, but the parameters on the D page that define the size of the upper screen and preview area are not set to allow enough space above the margin scale for the divided screen.

Action: Recall to the screen the system default page, labeled D on your program disk. Change the sizes of the upper screen and preview area, so that the upper screen has at least 28 lines. Reprogram the system, and access the divided screen. (See the manual that accompanied your console for information about how to change D-page parameters.)

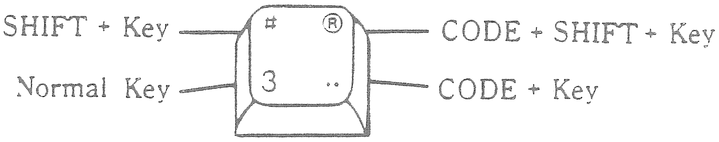
13.8 IDE II DEFAULTED TO ASCII. USER PAGE XX HAS ERRORS.

Reason:	When you access the divided screen, the IDE II software loads the translation tables that you selected in the CODE K sequence. This message indicates that the system tried to load user-defined translation tables that have some sort of format error. (XX represents the page label.)
Action:	Recall your tables and compare them with the examples given in "Character Translation Routines." Their format must exactly match that of the examples. Make the necessary changes and try again.

Appendix C: IDE II Keyboard Maps

There are two separate fonts that are used by your keyboard: the standard font, and the alternate font. Figure 13 and Figure 14 are keyboard maps of these two fonts.

This does not include the characters added when you redefine the keyboard. See "Special Characters Used in the Interactive Window" in this manual.



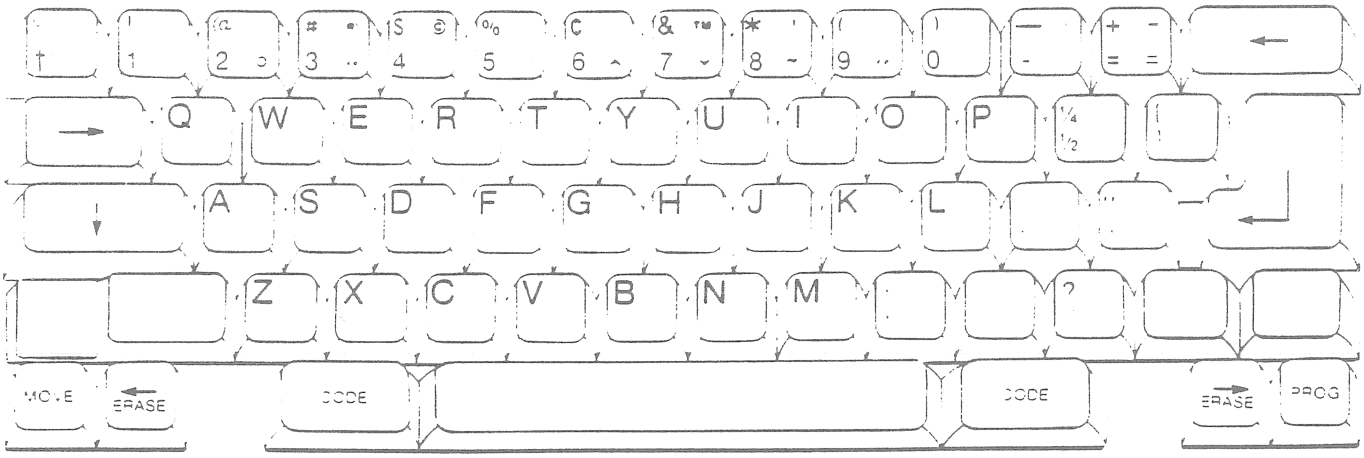
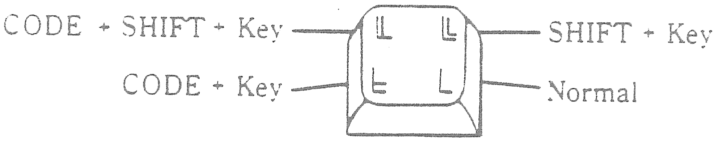


Figure 13. Keyboard map for the standard character set

To invoke the alternate font characters in Figure 14 you must first access the interactive screen, then touch CODE SHIFT D while INT is displayed on the IDE status line, and then touch SWITCH DISPLAY to return to word processing.



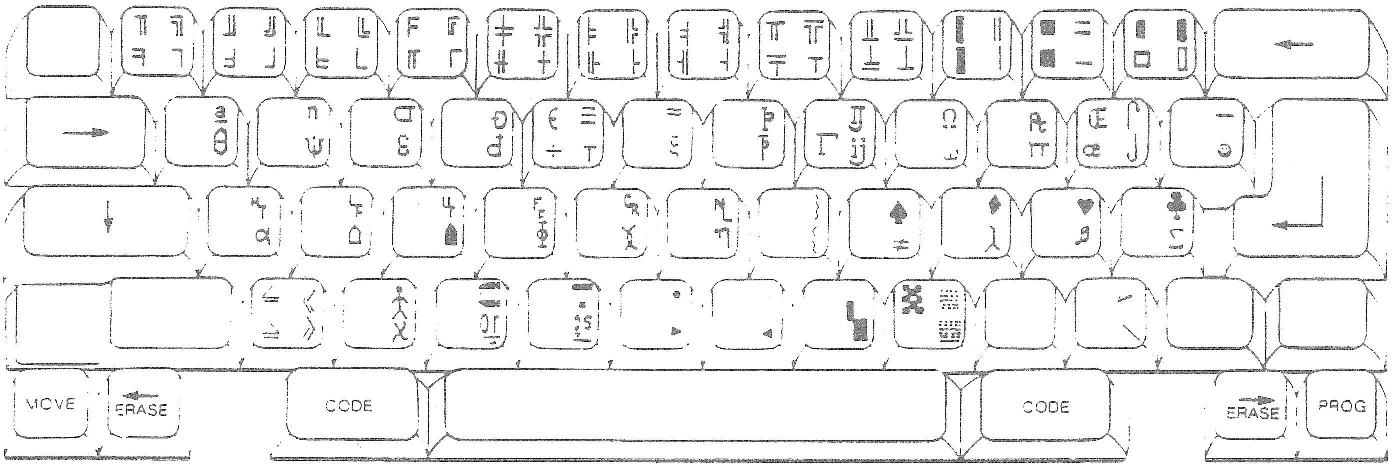


Figure 14. Keyboard map for alternate font character set

Appendix D: Feature Comparison and Specifications for IDE II DEC Emulation

FEATURES	VT52	VT100	VT220
80-column support	YES	YES	YES
132-column support	NO	YES	YES
Background Communications	YES	YES	YES
VT100 Character Graphics	NO	YES	YES
Reverse Video Characters	NO	YES	YES
Blinking Characters	NO	YES	YES
Underline Characters	NO	YES	YES
Half/Full Bright Characters	NO	YES	YES
International Characters	NO	NO	YES
Redefinable Keybrd/Char Set	NO	YES	YES

Figure 15. DEC emulation feature comparison

Specifications

Communications Display Window

Screen	24 or 25 lines of 132 characters
Screen Presentation	Black characters on white background or optional white characters on black background
Cursor	Blinking underscore
Status Line	Displays information about the upper window

Ability to move data to and from lower screen

Word Processing Display Window

Half or full page
Typing line entry
Full-feature word processing

Communication Parameters

Full Duplex TTY
Asynchronous
Parity Selectable -- None, Odd, and Even
Number of Bits Selectable -- 6, 7, 8
110 to 9600 Baud operator-selectable transmission rate
Transmit, receive, and display character graphicsin VT100 mode

Graphics Support

VT100 character graphics (96-character displayable ASCII subset)
Character graphics movement from the upper to lower screen
Character graphics movement from the lower to upper screen

Character Support

96-character displayable ASCII subset
    (Upper case, lower case, numeric, and punctuation characters. Exceptions are reverse slash, left and right curly braces, tilde, full ASCII set.)
CPT full character set
VT100/220 international character set (no down-line loadable fonts)
    (British, Dutch, Finnish, French, French Canadian, German, Italian, Norwegian, Spanish, Swedish, and Swiss.)
ISO character set
IBM standard character set
Front and back translation tables
Tools for creating translation tables

VT220 Functions

Cursor (blinking underscore)
VT100 cursor addressing
Character reverse video
Position report
Up, down, back, and forward cursor movement
Non-destructive space

Preview Window

Keyboard Functions

128 ASCII codes
Full cursor control (up, down left, right, and home)

Communications

Data format:	Asynchronous
Speeds:	user selectable 9600, 4800, 2400, 1200, 300, and 150 bps
Character size:	5, 6, 7, and 8 bits
Parity:	None, odd, and even
Stop bits:	2, 1.5, and 1
Flow control:	XON, and XOFF

Integration

Data transfer between communications and word processing by file, page, line.

Accessing
    -divided screen, 7
    -interactive window, 18
    -Local mode, 17
    -On Line mode, 17
    -word processing window, 18

Alternate font
    -ROM, 77
    -segment, 72, 73
    -value, 73

Application mode, 40, 43, 44

ASCII translation tables, 50

AUTOMATIC NEW LINE parameter, 51

Automatic record feature (CODE OUT), 27-28

Background communications, 2, 30-37

Backspace key, 46

Baud rate, 53

BLACK-ON-WHITE parameter, 9, 52

Caps lock key, 46

CHANGE CONTROL CHARACTERS parameter, 37

Character attributes
    -copying text with, 29
    -description, 29

CHARACTER LENGTH parameter, 54

CHARACTER PARITY parameter, 54

Character sets, 2, 87-91

Character translation routines
    -description, 71-86
    -process overview, 71

CODE ADJ function, 17

CODE K sequence. See Operating parameters.

CODE OUT feature, 27-28

CODE SHIFT I sequence. See Communications parameters.

CODE SHIFT K sequence. See Reception parameters, Transmission parameters.

Commands and escape sequences
- -VT100, 62-64
- -VT100 unsupported, 64
- -VT220, 65-70
- -VT220 unsupported, 69-70
- -VT52, 59-61

Comment lines on translation tables, 83

Communications parameters
- -considerations for setting, 14
- -description, 53-54
- -setting with CODE SHIFT I sequence, 12-14

Control key, 46, 55

Copy DOWN function, 15, 19-20, 29

Copy UP function, 15, 23-24, 29

Copying text from the interactive window
- -considerations for text with special characters, 29
- -one line at a time, 19
- -one page at a time, 21-22

CPT 8276 SNA controller, communicating through, 55

Cursor controls in the interactive window, 15, 46

Data lines on translation tables, 81

DEC functions, 58-70

DEC terminals, emulating, 3, 58-70, 96-98

Default translation tables, 71

Delete key, 46

Direct access segment, 76, 77

DIRECTORY parameter, 35

Directory transmission, 35

DISK TRANSMISSION parameter, 34

Divided screen
    -accessing, 7
    -considerations for accessing, 8
    -description, 5-8
    -elements, 5-6
    -using, 15-29

Eight-bit mode, 77

END-OF-PAGE CODE parameter, 34

Error messages, 92-93

Escape key, 46, 55

ESTIMATED PAGE SIZE parameter, 36

Features of IDE II, 2

FILE NAME parameter, 35

Horizontal scroll, 48

Host computers, 4

IBM
    -communications functions, 56-57
    -function keys, 40, 42
    -functions, 50
    -3270 terminals, emulating, 3, 55-57

Ide protocol, 33

IDE status line, 5

Interactive window
    -control functions, 45-46
    -description, 5
    -keyboard use, 38-46
    -soft key functions, 40-44
    -special characters, 39
    -ten-key pad functions, 40-44

Interactive window operating parameters. See Operating parameters.

Keyboard
    -maps, 94-95
    -programs, 15
    -use in interactive window, 38-46
    -redefining, 39

Line DOWN function, 19

Line types on translation tables, 79-83

LINES ON SCREEN parameter, 49

LINES/PAGE parameter, 36

LOCAL ECHO parameter, 49

Local mode, 17

Lower (word processing) window, 5

MAINTAIN COMM BETWEEN MODES parameter, 53

Modem 7 protocol, 33

No scroll mode, 48

Non-escape string segment, 72, 73

Normal font segment, 72, 73

Numeric keypad mode, 40, 41

NUMERIC 10 KEYPAD parameter, 50

On Line mode, 17

Operating parameters
    -considerations for setting, 11
    -description, 48-52
    -setting with CODE K sequence, 9-14

Page DOWN function, 21

Parameters. See Communications parameters, Operating parameters, Reception parameters, Transmission parameters.

RATE parameter, 53

Receiving text
    -background operation, 30-37
    -setting parameters, 31-32

Reception parameters, 36, 37

Reception tables
    -creating, 86
    -description, 76-78
    -direct access segment, 76, 77
    -example, 78
    -string segment, 76, 77

Redefining the keyboard, 39

Retrieving files directly to the word processing window, 25-26

ROM, 77

Screen
    -attributes, 2
    -memory, 8, 48

SCREEN WIDTH parameter, 48

Scroll DOWN feature, 15, 25-28

Scroll mode, 48

Segment separation lines on translation tables, 83

SELECTION parameter, 33

Seven-bit mode, 77

Soft keys
    -functions in the interactive window, 40-44
    -using with the divided screen, 16

Space bar, 46

Standard font ROM, 77

Standard translation table, 71

STOP BITS parameter, 53

String segment, 76, 77

SWITCH DISPLAY soft key, 15, 16, 18

Switching screens, 15

System messages, 92-93

TABLES parameter, 9, 50

Ten-key pad functions in the interactive window, 40-44

TERMINAL TYPE parameter, 48

TEXT UP CR TRANSLATION parameter, 52

Title lines in translation tables, 79-80

TK page, 39

TRANSFER PROTOCOL parameter, 33

Transferring text between windows, 15

Translation routines. See Character translation routines.

Translation tables
- -creating and loading, 84-86
- -recording, 84
- -selecting in CODE K sequence, 50
- -standard, 71

Transmission parameters, setting, 34-35

Transmission tables
- -alternate font segment, 72, 73
- -creating, 85
- -description, 72-75
- -example, 74-75
- -non-escape string segment, 72, 73
- -normal font segment, 72, 73
- -segments, 72, 73

Transmitting text
- -background operation, 30-37
- -setting parameters, 31-32

Underlined characters, copying text with, 29

Upper (interactive) window, 5

User-defined translation tables. See Translation tables.

VT100 functions, 62-64

VT220 functions, 65-70

VT52 functions, 59-61

Word processing features, 2

Word processing window, 5

WRAPAROUND parameter, 51

X OFF function, 55

X ON function, 55